

Application No.: 10/540,662
Amendment dated: November 10, 2008
Reply to final Office Action of October 14, 2008
Attorney Docket No.: 0065.0002US1

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in this application:

Listing of Claims

Claims 1–36 (canceled)

Claim 37 (currently amended): A method of processing sulfide minerals and concentrates by oxidation of sulfide minerals in an aqueous medium using an oxidizing agent which is one ~~ore~~ or more of nitric acid, nitrous acid and their oxides, the method comprising:

subjecting in an oxidation reactor a slurry containing the sulfide minerals to oxidation under agitation and under controlled conditions of slurry acidity, ~~wherein oxidation of the sulfide minerals is performed~~ using the oxidizing agent which is one ~~[[ore]]~~ or more of nitric acid, nitrous acid and their oxides ~~and is realized under agitation;~~

forming in the oxidation reactor a ~~sulphuric~~ sulfuric acid as a result of the sulfide oxidation ~~[[and]];~~

constantly neutralizing the ~~sulphuric~~ sulfuric acid using an acidity neutralizer to an acidity level at which no formation of elementary sulfur occurs;

removing of heat released during the sulfide oxidation from ~~[[an]]~~ the oxidation reactor ~~in which;~~

transferring NO from the oxidation reactor into a regeneration oxidizer;

regenerating N₂O₃ from the transferred NO using air or oxygen in the regeneration oxidizer; and

transferring the regenerated N₂O₃ into the oxidation reactor;

wherein the temperature in the oxidation reactor is maintained in a range from 20 to 90 °C and

~~in which~~ wherein a liquid-to-solid ratio in the slurry in the oxidation reactor is between 1:1 to 5:1.

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Claim 38 (previously presented): The method according to claim 37 in which the acidity neutralizer is one or more of CaCO_3 , MgCO_3 , $\text{Ca}(\text{OH})_2$, CaO , NaOH and CaHPO_4 .

Claim 39 (previously presented): The method according to claim 37 in which the temperature is maintained in the range of 65-85°C.

Claim 40 (currently amended): The method according to claim 37, further comprising separating ~~nitrogen oxides~~ the N_2O_3 , formed in said method, from ~~inert nitrogen in the air N_2~~ by absorbing the ~~nitrogen oxides in~~ N_2O_3 from a mix of gases comprising N_2 and N_2O_3 into a sulfuric acid solution which has a concentration in the range 75-98%;
and

denitrating the sulfuric acid solution thermally by heating it to a temperature not exceeding 250°C, and/or chemically by introduction of a denitrating substance.

Claim 41 (previously presented): The method according to claim 40, in which the denitrating substance is one or more of an alcohol, formaldehyde and other chemical reducing agents.

Claim 42 (currently amended): The method according to claim ~~[[39]]~~ 37, further ~~including~~ comprising

separating the ~~nitrogen oxides~~ NO , formed in said method, from ~~inert nitrogen in the air N_2~~ by absorbing the ~~nitrogen oxides in~~ NO from a mix of gases comprising N_2 and NO into a monovalent copper salt solution;

denitrating the monovalent copper salt solution using a dosed supply of compressed air, with ~~[[the]]~~ optional simultaneous heating of the solution.

Claim 43 (previously presented): The method according to claim 42 in which the monovalent copper salt solution contains a stabilizing agent to impede oxidation of copper from monovalent to bivalent.

Claim 44 (currently amended): The method according to claim 43 in which the stabilizing agent is one or more of tributyl phosphate, adipodinitrile, or reducing agents such as formaldehyde or hydrazine.

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Claim 45 (canceled)

Claim 46 (currently amended): The method according to claim 37, ~~further comprising~~
wherein the regenerating ~~a dinitrogen trioxide~~ the N_2O_3 from ~~a nitric oxide~~ the NO
formed in said method is performed using pure oxygen in an individual regeneration
oxidizer and at a temperature of 15-25°C, ~~so as to prevent the accumulation of nitric acid~~
~~in the slurry.~~